

The Role of the Organization in Investigations in “Non- traditional” Domains

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Focus had typically been on the operator in investigations of incidents/accidents in high risk environments

- Pilots
- Physicians, nurses, etc.
- Nuclear reactor operators

Beginning in the 1980s investigators took an increasingly macroscopic view of accident causation

- Origins in accidents such as TMI in 1977
- Due to influence of researchers such as Rasmussen, Reason, Perrow, Norman and others
- Their influence can be seen today in investigations in “traditional” and “non-traditional domains”

In this view the operator is seen as

- One of potentially many elements of the operating system
- Susceptible to the adverse effects of poor equipment design, inadequate training, poor procedures, etc.
- Performing in direct relationship with the quality of these influencing system elements

This view has been applied primarily in “traditional” domains

- Transportation-aviation, marine, rail,
(but not automobiles)
- Nuclear industry
- Chemical industry
- Electrical generating facilities
- Electrical transmission systems

But in recent years it has been
applied to non-traditional
domains as well

- Space shuttles
- University bonfires
- Spy catching





Space Shuttle Columbia

- STS (Space Transportation System) 107 launched January 16, 2003
- Objectives: Conduct research and data collection activities
- Crew of 7, 2 pilots, 5 payload and mission specialists, including 1 Israeli
- Shuttle destroyed during reentry on February 1, 2003
- All aboard were killed

NASA protocol called for an investigation to be headed by a commission named by the Administrator

- This was different from the Presidential Commission appointed by President Reagan following the Challenger accident
- Congressional leaders made clear their desire for independence of the commission
- The CAIB finally included 13 members, including Sally Ride and a Nobel Prize winner, as in the Rogers Commission

CAIB report issued late August 2003. The cause of the accident was attributed to:

- A breach in the thermal protection system on the leading edge of the left wing (lower half of the Reinforced Carbon Carbon panel) that led to structural failure during reentry.
- Foam insulation from the external tank struck the wing 81.7 seconds after launch.
- This breached the thermal protection system causing the subsequent failure during reentry.
- The foam insulation strike was known to mission commanders and support personnel from the start.

But the CAIB gave equal, if not greater weight, to organizational aspects of the accident

- The risks posed by foam insulation striking the thermal protection system were known by some within NASA and its contractors.
- Because of organizational failures within NASA, mission commanders minimized the nature of these risks and came to accept them as relatively benign-they were “normalized”

Indices of failure

- Foam shedding during launch was not uncommon
- The foam had never struck the underside of the wing and penetrated to the RCC layer
- Because the foam strikes had never led to serious consequences, their hazards became increasingly accepted

Among the CAIB findings:

The organizational limitations that led to acceptance of these risks paralleled similar organizational limitations that minimized the risks posed by exposure of O rings to cold during the launch of the Challenger

From the CAIB report

“The premium placed on maintaining an operational schedule, combined with ever-decreasing resources, gradually led Shuttle managers and engineers to miss signals of potential danger.”

From the CAIB report

“Foam strikes on the Orbiter’s Thermal Protection System, no matter what the size of the debris, were ‘normalized’ and accepted as not being a ‘safety of flight risk.’”

From the CAIB report

“If there was in fact a strong safety culture at NASA, safety experts would have had the authority to test the actual resilience of the leading edge Reinforced Carbon-Carbon panels, as the Board has done.”

From the CAIB report

“Organizations with strong safety cultures generally acknowledge that a leader’s best response to unanimous consent is to play devil’s advocate and encourage an exhaustive debate. Mission Management Team leaders failed to seek out such minority opinions.”

From the CAIB report

“...despite all the post-*Challenger* changes at NASA and the agency’s notable achievements since, the causes of her institutional failure responsible for *Challenger* have not been fixed...If these persistent, systemic flaws are not resolved, the scene is set for another accident.”



Texas A & M Bonfire

- November 18, 1999
- Texas A & M tradition called for a large bonfire the night before the game against UT
- Early bonfires were little more than stacks of wood and trash
- The stack became increasingly complex as it grew in size over the years

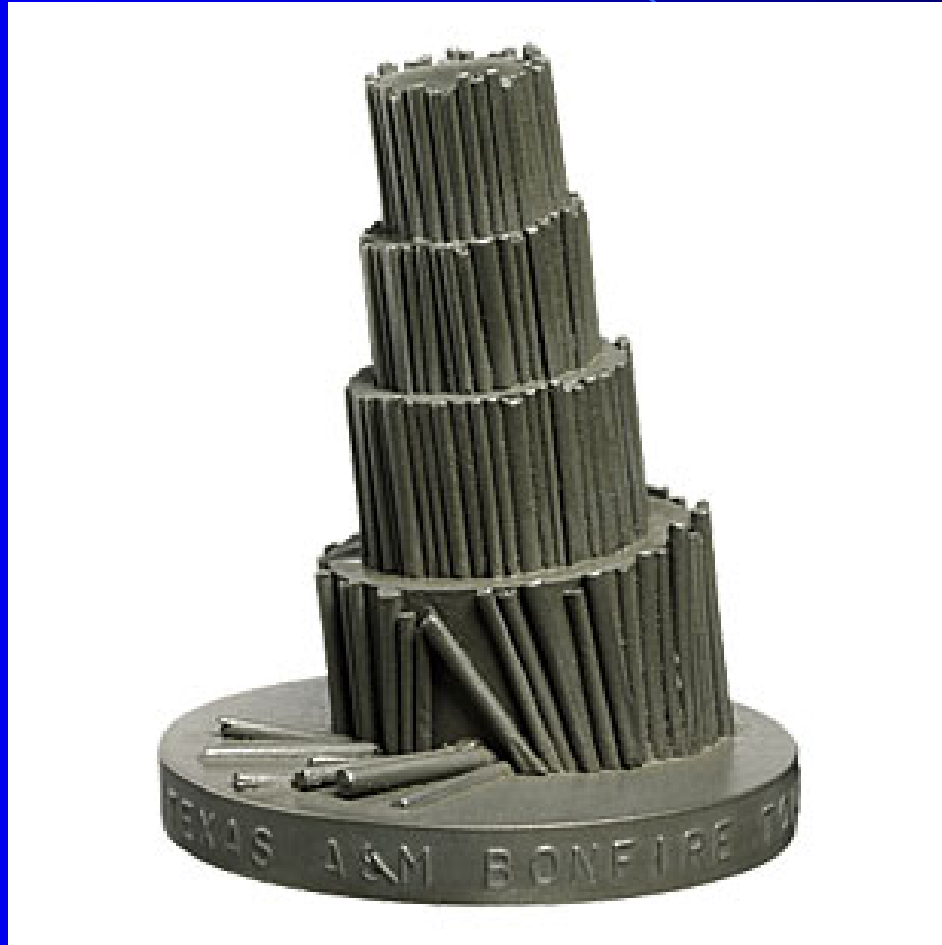
Texas A & M Bonfire

- Construction took many days, many students participated in design and construction
- In 1999 the stack collapsed during construction
- 12 killed and 27 injured
- University President established a Special Commission to investigate the collapse and issue findings and recommendations

The structure

- “Wedding cake” design
- 60 to 80 feet tall
- Six tiers bound with wire
- Two part spliced center pole
- Anchored by four perimeter poles with guy ropes

Model of the fatal design



Findings of the Special Commission

- Physical failure was caused by containment failure of the 1st stack of logs
- This was caused by two factors
 - Stress caused by excessive wedging of second stack into the first
 - Inadequate containment of the first stack
- The Commission also concluded

Among its findings

- Injury rate of those working on the stack had increased 80% from 1996 to 1998
- 1999 was the first time in 5 years that steel cables were not used to reinforce the steel bands around the first log layer
- 1999 logs that were used were more crooked than usual-allowing more wedging

Among its findings

- Despite prohibitions against its use, many students consumed alcohol during the stack's construction
- Hazing, horseplay, and fighting were common during the construction
- Student leaders who lacked the expertise made critical design decisions

From the Commission report

“This organizational failure is complex but includes such things as the absence of an appropriate written design or design process, a cultural bias impeding risk identification, and the lack of a proactive risk management approach.”

From the Commission report

“The physical failure and causal failure were driven by an organizational failure. This failure, which had its roots in decisions and actions by students and University officials over many years, created an environment in which a complex and dangerous structure was allowed to be built without physical or engineering controls.”

From the Commission report

“...the evidence of ongoing problems with Bonfire [stack construction] is so overwhelming that collectively these problems should have triggered a broader reexamination of Bonfire—[stack] design and construction. Unfortunately, this did not occur.”



ROBERT HANSSEN

Robert Hanssen

- Joined the FBI in 1976 after first becoming a CPA, then after joining the Chicago Police Department
- Began espionage activities in 1979 and was caught in 2001
- He was not the first FBI special agent convicted of espionage
- Certainly the one who caused the most damage to the national security of the United States

Robert Hanssen

- He had been a dental student before that
- Engaged in espionage during three discrete periods
 - 1979-1981
 - 1985-1991
 - 1999-2001

Robert Hanssen

- The reason's for Hanssen's activities were difficult to explain-this may have contributed to the FBI's continuing inability to catch him
- He was neither an alcohol or drug abuser, or a gambler, did not live ostentatiously, and was a deeply conservative, devout, family man

Robert Hanssen

- He was caught not because of FBI activity but because his Russian file was turned over to the US
- Up until the very end, FBI personnel continued to discount evidence pointing to him as the source of serious security lapses

The investigation

- Conducted by the Department of Justice Inspector General
- Focused on the FBI's performance and failure to identify Hanssen as a spy
- The report is classified, but an executive summary was released to the public shortly before the completion of the CAIB report

Among the findings

- Hanssen repeatedly violated FBI security procedures
- He was given “very favorable” performance ratings, despite poor performance as a supervisor, and dislike by his own supervisor
- In 1987 he disclosed sensitive information to a Soviet defector, against rules. This was reported to FBI security but no action was taken

Among the findings

- In early 1990s he hacked into the FBI data base containing Soviet counterintelligence documents. He later reported this to FBI security out of fear of being caught. No action was taken.
- Later, he disclosed highly sensitive information to British intelligence, in violation of FBI management directives
- Then, he was involved in a physical altercation with a female FBI employee

Among the findings

- He was then reassigned out of a supervisory position, but was effectively unsupervised
- He then regularly accessed the FBI's data base of sensitive information, including references to his own name. The FBI did not check who was accessing this information, despite its ability to do so
- He later improperly disclosed classified information to close friends, D. of State employees, and others

Among the findings

- In 1993 he approached a Russian GRU officer and offered sensitive documents, an attempt to reestablish contact with the Russians. The diplomat reported this to his superiors, and the Russians filed an official protest. No action was taken against him
- He received at least \$.5 M from the Russians, much of which he stored in his bedroom closet and deposited, under his own name, in a passbook savings account in a bank 1 block from FBI headquarters

From the OIG report:

“...there was essentially no deterrence to espionage at the FBI during the 1979 to 2001 time period...[Hanssen’s] removal of hundreds of classified documents from the FBI and improper searches of the Bureau’s computer system for references to himself and to the Bureau’s most sensitive espionage investigations went unnoticed.”

From the OIG report:

“Longstanding systemic problems in the FBI counterintelligence program play an important role in the FBI’s failure to uncover Hanssen.”

From the OIG report:

“Ineffective oversight by FBI management and poor coordination with the Justice Department also contributed to the length of the FBI’s investigation of the wrong suspect and the failure to pursue alternative avenues.”

From the OIG report:

“The Hanssen case highlighted significant, longstanding deficiencies in the FBI’s internal security program, many of which were brought to the attention of FBI management over the years but were not corrected.”

From the OIG report:

“We believe that what is needed at the FBI is a wholesale change in mindset and approach to internal security.”

From the OIG report:

“In sum, Hanssen escaped detection not because he was extraordinarily clever and crafty, but because of longstanding systemic problems in the FBI’s counterintelligence program and a deeply flawed FBI internal security system.”

What does this mean?

- The focus on the organization has been broadened beyond its initial focus
- The public has increasingly been looking beyond the “guilty person” to the organization responsible for his/her conduct
- This has also filtered down from federal to state and local investigations
- There is still a long way to go

Other applications

- NY State attorney general's investigation of brokerage houses and his current investigation of mutual fund practices
- Changes to security laws
- Criminal prosecution of corporate officers in Enron, Adelphia, and other corporate scandals
- Martha Stewart's stock deals

Potential future applications?

- 2003 blackout

Future considerations

- There will likely always be a tension between the organization's focus on the individual and the need to address internal deficiencies that influenced his/her behavior
- This has led to an improvement in safety, financial management, and organizational efficiency

The assessment of organizational responsibility has been a positive factor. But

- True independence is needed to result in objective findings
- Maintaining the “big picture” throughout an investigation is not easy
- Determining the stopping point may be a political decision